



GOVERNMENT OF INDIA  
MINISTRY OF TOURISM AND CIVIL AVIATION  
(COMMISSION OF RAILWAY SAFETY)

RAILWAY ACCIDENT INVESTIGATION



No. 7 Down Puri-Howrah Express Train

between

Retang—Bhubaneshwar Stations,

South Eastern Railway,

on

28TH NOVEMBER, 1971.

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## SUMMARY

1. Date ..	..	..	28th November 1971.
2. Time ..	..	..	19.50 Hrs.
3. Railway	..	..	South Eastern.
4. Gauge	..	..	Broad 1.676 meters (5'×6").
5. Location	..	..	Between Retang and Bhubaneswar stations (Km. 439.90 from Howrah).
6. Nature of accident	..	..	Derailment.
7. Train involved	..	..	7 Down Puri-Howrah Express.
8. Consisting of	..	..	17 Coaches.
9. Engine No.	..	..	(i) 7323/WP (Leading). (ii) 7322/WP (Following).
10. Estimated Speed	..	..	About 75 Km. P.H.
11. System of Operation	..	..	Absolute Block system (Double Line Lock & Block Instruments).
12. Number of Tracks	..	..	Two.
13. Gradient	..	..	1 in 175.
14. Alignment	..	..	1° fully transitioned curve.
15. Weather	..	..	Clear.
16. Visibility	..	..	Good.
17. Casualties	..	..	Grievous injury—4, Simple injury—12.
18. Cause	..	..	The two joints of one of the rails having been opened out and the rail shifted, causing a gap in the continuity of the rails, by some unknown persons.
19. Persons held responsible	..	..	No railway staff is responsible.

C O R R I G E N D U M

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Government Of India  
Ministry of Tourism & Civil Aviation  
(Commission of Railway Safety)

From

The Additional Commissioner of Railway Safety,  
Southern Eastern Circle,  
14, Strand Road, 12th Floor,  
Calcutta-1.

To

The Secretary to the Govt. of India,  
Ministry of Tourism & Civil Aviation,  
New Delhi.

Through : The Commissioner of Railway Safety, Lucknow.

Sir,

In accordance with Rule 10 of Railway Board's Notification No. 59/TTV/42/1 dated 11-4-1966, I have the honour to submit herewith the report of my inquiry into the Derailment of 7 Down Puri-Howrah Express train between Retang and Bhubaneswar stations on the Waltair-Howrah BG section, S.E. Railway, at about 19.50 hrs. on 28-11-1971.

**The Accident**

2. At about 19.50 hrs. on 28th November 1971 when North bound 7 Down Puri-Howrah Express was on the run between Retang and Bhubaneswar on the Waltair-Howrah double line section of the South Eastern Railway, it became derailed at Km. 439/14-15 in a cutting 14' deep, where the track is on a 1° curve. The train consisted of 17 bogie coaches hauled by two WP locomotives and was fully vacuum-braked. According to the Driver of the leading engine, the speed of the train at the time of the derailment was about 70 to 75 Km. P. H. The weather was clear and the visibility in the engine headlights good.

3. Within about an hour of the accident, it was observed that the first point of derailment was an exposed running off end of a rail, on the left side of the track, where the joint was found in the open condition. There were two fish plates lying parallel to the rail on the inside and four fish bolts and nuts lying near the joint on the outside. The Police had also arrived in the meanwhile and saw this condition. The next rail was displaced to the right and was lying tilted on its side, 7' -3" ahead, with its head facing inwards and flange facing outwards. The rail was undamaged without any marks on it and pinned under a coach viz. FCT 894 SE, 5th from the locomotive. The first sleeper, ahead of the open joint, was of wood and was found intact and in position with anti-creep bearing plate. The two keys were lying loose on either side of the bearing plate on the sleeper. The next seven sleepers, viz. 2nd to 8th from the joint, were steel trough which were also in position and had dents and wheel marks at the left rail seats, the extent of denting and crushing increasing in the direction of movement. The track ahead was badly disturbed and distorted.

4. As a result of the accident :

- (i) The leading engine No. 7323 WP and its tender had derailed of all wheels.
- (ii) Second Engine No. 7322 WP was lying on its left side, at an angle of approximately 45° to the track, with the smoke box and resting against the right side wall of the cutting. It was blocking both the up and the down lines while its tender was standing vertically, parallel to the track, with all its trolley wheels under it but dislodged.
- (iii) The buffers of the first coach viz. WFCT 2038, had punctured the rear end of the tender water tank and penetrated completely into it telescoping into the tender to an extent of about 9" while the tender had pressed into the leading end of the coach damaging its entire end structure. The rear end of the coach was crushed by the 2nd coach, viz. TLR 2729, and a portion of this end was torn and entangled with front portion of the TLR. Both the trolleys had separated from the coach.
- (iv) The 2nd coach viz. TLR 2729 had broken into two and the leading half was lying perched on the right side (up track side) of the cutting parallel to the track while the trailing half (3rd class portion) was lying across the up track perpendicular to it. The leading trolley was hanging from the coach in a twisted condition while the rear trolley had both the wheels thrown out, lying scattered.

(v) The next coach GTY 2132 had derailed and was standing on the ballast leaning to the left and resting against the walls of the cutting. The leading trolley had dropped out while the trailing trolley was attached to the coach with pivot pin bent.

(vi) 4th coach GT 2110 was standing upright on the ballast with all wheels derailed.

(vii) The 5th coach FCT 894 was derailed of all leading end trolley wheels while the trailing end trolley was on rails.

The remaining 12 coaches of the train were standing unaffected in the rear.

#### Casualties

5. 16 persons were injured in the accident, the injuries to 4 being of a grievous nature. This number does not include those who had trivial injuries and were allowed to proceed after receiving first-aid.

*Note* :—Earlier the No. of injured supplied by the Railway was 15. One reported later and was included in the list.

#### The Inspection and Inquiry

6. (a) The intimation of the accident was received at Calcutta at about 21.30 hrs. on the 28th November 1971 and I left for the site of the accident by a Special train leaving Howrah at 23.40 hrs. accompanied by the Chief Engineer, South Eastern Railway and other Heads of Departments.

(b) The site of the accident, the derailed locomotive and the rolling stock as well as the condition of the track were inspected on the morning of 29th November 1971. The position of the track fittings, as found at site and the track damage were observed and noted.

(c) Instructions were issued for photographs being taken of the significant features observed and for preparation of sketches to incorporate all these and record in detail the location and disposition of the disturbed track and various track fittings seen lying at site. Instructions were also issued to recover all the rail fittings, sleepers and fastenings, damaged or undamaged, and mark them for easy identification later.

(d) A visit was paid to the Capital Hospital, Bhubaneswar where all the serious cases had been admitted, to make sure that the injured were being looked after properly.

7. (a) The Inquiry was commenced at Bhubaneswar station on 2nd December 1971 and continued there on the 3rd and 4th.

The following Officers were present at the inquiry :—

1. Shri K. N. Nair, Transportation Superintendent (Safety), South Eastern Railway, Garden Reach, Calcutta.
2. Shri B. Mohanty, Divisional Superintendent, South Eastern Railway, Khurda Road.
3. Shri H. S. Sinha, Dy. Chief Engineer (Track), South Eastern Railway, Garden Reach, Calcutta.
4. Shri A. Sen, Dy. Chief Mechanical Engineer (Loco), South Eastern Railway, Garden Reach, Calcutta (on 2-12-71 only).
5. Shri P. Krishnamurthy, Dy. Chief Mechanical Engineer, (Carriage & Wagon), South Eastern Railway, Garden Reach (on 3-12-71 & 4-12-71).

(b) The Civil and Police authorities were duly advised of the date, time and place of the inquiry and they were represented as follows :—

1. Shri S. C. Patnaik, Sub-Divisional Officer, Bhubaneswar (on 2-12-71 only).
2. Shri D. M. Misra, Superintendent of Police (Crime Branch), Cuttack (on 2-12-71 only).
3. Shri P. C. Senapati, Additional Superintendent of Police, Bhubaneswar.
4. Shri G. C. Lenka, Dy. Superintendent of Railway Police, Cuttack.
5. Shri A. Khadara, Inspector, C.I.D. (Crime Branch), Cuttack.

(c) A press notification was issued on 30.11.71 inviting the public who may have had any information bearing on the accident to appear at the inquiry or to write to me at my Calcutta address.

(d) The evidence of 43 witnesses was recorded.

*Note* :—1. In this report, the terms 'right' and 'left', 'leading' and 'trailing' and 'front' and 'rear', where used, are in reference to the direction of travel of the derailed train.

2. The kilometerage of the various stations mentioned in the report and other points connected with the accident are reckoned from Howrah Station and are as given below:

								Kms.
1. Howrah	..	..	..	..	..	..	..	0.00
2. Kharagpur	..	..	..	..	..	..	..	115.5
3. Nergundi	..	..	..	..	..	..	..	398.1
4. Cuttack	..	..	..	..	..	..	..	408.7
5. Bhubaneswar	..	..	..	..	..	..	..	436.4
6. Site of Accident	..	..	..	..	..	..	..	439.9
7. Retang	..	..	..	..	..	..	..	447.9
8. Khurda Road	..	..	..	..	..	..	..	455.3
9. Puri	..	..	..	..	..	..	..	498.9

### The Train

8. The train involved in the accident viz., 7 Down Puri-Howrah Express, consisted of 2 WP locomotives and 17 coaches marshalled as under—

								<u>Year Built</u>
1. Leading Engine No. 7323 WP	..							
2. 2nd Engine No. 7322 WP	..							
3. Coach No. WFCT 2038	..		First Class Coupe & Third Class		..	..	..	1963
4. „ No. TLR 2729	..		Third, Luggage & Brake		..	..	..	1962
*5. „ No. GTY 2132	..		Third Class with Ladies		..	..	..	1959
6. „ No. GT 2110	..		Third Class		..	..	..	1961
7. „ No. FCT 894	..		First Class & Third Class		..	..	..	1962
*8. „ No. WAC 690	..		Air-conditioned		..	..	..	1946
9. „ No. FC-380	..		First Class		..	..	..	1961
10. „ No. FC 426	..		First Class		..	..	..	1961
11. „ No. TPPT 2790	..		Third, Postal unit		..	..	..	1967
*12. „ No. GSY 2020	..		Second with Ladies		..	..	..	1956
13. „ No. WGTCNY 5819	..		Third Class 3-tier sleeper with Ladies		..	..	..	1968
14. „ No. WGTCWY 5876	..		Third Class 2-tier sleeper with Ladies		..	..	..	1959
*15. „ No. GTY 1952	..		Third Class with Ladies		..	..	..	1956
16. „ No. GT 1163	..		Third Class		..	..	..	1963
17. „ No. GT 1157	..		Third Class		..	..	..	1968
18. „ No. GT 5129	..		Third Class		..	..	..	1968
19. „ No. TLR 2416	..		Third, Luggage & Brake		..	..	..	1966

*Note : 1. All the coaches belonged to the South Eastern Railway except the first which was from Eastern Railway.*

2. Prefix G represents a generating coach & W a vestibuled coach.

3. All the Coaches were of Anti-telescopic design except the four marked with \*.

9. The Engine and tenders of both the locomotives were equipped with steam and vacuum brakes respectively, working in conjunction. Headlights and VDO Speedometer-cum-recorder in working order were also fitted to the two locomotives. The Speedometer-cum-recorder, however, did not have the proper tachograph charts for recording, with the result that no indication could be had, of the speed at which the train was running at the time of the accident.

The total length of the train over buffers including the locomotives was 426.263 meters (1398'-6") and its gross weight 1029.9 tonnes. The train was equipped with vacuum brakes and the brake power of the train was cent per cent, 13 coaches out of the 17 having been fitted with KNORR valves.

## Passenger Occupation

10. The train was nearly half empty. The carrying capacity of the train and the number of passengers estimated to travel in the train was 839 and about 390 as follows :—

			Carrying Capacity	Actual Occupation
A. C. Class	..	..	14	6
1st Class	..	..	48	16
2nd Class	..	..	76	10
3rd Class	..	..	701	358
		Total	839	390

## The Damage

### 11. Locomotives

1. Front locomotive (No. 7323 WP)—did not suffer much damage. The cradle casting of the engine was damaged, besides other minor damage to spring hangers, yoke safety brackets and various other parts. Its tender also suffered some damage with the floor plate having buckled and cracked, the water tank getting pressed and punctured on the right hand side and other minor damage to the under frame, foot steps, ladder etc.

2. Trailing Locomotive (No. 7322 WP)—The locomotive including its tender had considerable damage with the front end frame having buckled and the cab having been completely smashed. In addition, there was severe damage to the under gear as well as to other parts. The tender had also suffered considerable damage with the back plate having been punctured from the rear and the holding down bolts having sheered from the under frame. The tender under frame was badly twisted and bent.

### 12. Rolling Stock

1. WFCT 2038 (next to the engine)—suffered major damage with the rear portion having been crushed and twisted. Both the pairs of wheels of the rear trolley had worked out and all brake gear fittings were damaged. A part of the rear portion was torn and was resting on the front portion of the next coach. Besides, there was extensive damage to the brake gear and the trolleys. The front buffers which had penetrated into the engine had broken.

2. TLR 2729 (second from the engine)—The body and the coach broke into two parts; the trolleys and wheels also suffered considerable damage while one door had broken and fallen out and half portion of the rear end roof was crushed.

3. DTY 2132, GT 2110, FCT 894—The damage to these coaches was comparatively light, mostly to the wheel trolleys, under gear, head stock buffers and the brake gear.

13. Permanent Way—8 rail panel lengths on the Down line and one rail length on the Up line of the track were affected, the rails and sleepers having been extensively damaged.

14. The total estimated cost of damage is Rs. 2,50,000 as under :—

(i) Locomotives	..	..	Rs. 60,000
(ii) Rolling Stock	..	..	Rs. 1,50,000
(iii) Permanent Way	..	..	Rs. 40,000
			Rs. 2,50,000

## The Relief

15. Immediately after the accident at 19.50 hrs. the First Fireman of the leading engine and a passenger travelling by 7 Down Express ran to the nearest gate lodge at Km. 439/4 and informed the Switchman of Bhubaneswar South Cabin over the telephone regarding the accident. The Switchman passed on the information to the Assistant Station Master on duty at Bhubaneswar, according to whom, the time then was 19.55 hrs. It is impossible that any one should be able to reach the gate lodge within five minutes and inform the Switchman, of the accident. It, therefore, appears that there was some difference in the timings. From the fact, however, that the Control was informed by the Assistant Station Master at 20.05 hrs., it could be inferred that he got the information a little before that, may be 20.03 or 20.04 hrs.

The Assistant Station Master, Bhubaneswar, also arranged to advise the local, civil and police authorities as well as the local Government Hospitals. In the meanwhile, after rendering first-aid to the injured, the Guard of the train, arranged to fix up the portable telephone at the site over which the Loco Inspector (Maintenance), Khurda Road, travelling by the same train, conveyed detailed information to the Control at 20.40 hrs.

16. On receiving the information of the accident, an ambulance car with doctors was despatched from the Capital Hospital of Bhubaneswar and it arrived the site at 20.45 hrs. By this time, first-aid was already being rendered by the Guard and other railway staff on the train. Valuable assistance was received from the passengers travelling on the train as well as outsiders who helped the injured to be taken to the ambulance car at the top of the cutting, for being transported to the hospital.

17. Khurda Road Control, disseminated the information to all concerned and advised the civil and police officials at Puri. The Medical Relief Van equipped with 'A' Class equipment at Khurda Road was ordered to proceed to the site and left Khurda Road at 20.40 hrs. arriving at the site of accident at 21.34 hrs.

18. The Chief Medical Officer, Garden Reach, who happened to be at Khurda Road, and the Divisional Medical Officer, Khurda Road, along with some medical equipment, started by road at 20.45 hrs. and reached the site at 21.40 hrs. By that time, however, all the injured had been removed to the local Govt. Hospital and they proceeded there to ensure that the injured were being looked after properly.

19. The Catering Manager along with bearers went to the site of the accident and served biscuits and hot tea to the injured as well as to other passengers who asked for it. Some of the passengers wanted to go to Bhubaneswar station and they were taken there in railway vehicles. Most passengers, however, preferred to spend the night in the train itself as it was quite late. Next morning, buses were arranged from the Orissa Transport Company, and passengers with their luggage were transported to Bhubaneswar station between 6.30 and 8.30 hrs. They were, later, despatched by 46 Down Express leaving Bhubaneswar at 10.10 hrs., for Howrah. Other passengers stranded at Bhubaneswar and Khurda Road on account of the disruption of train services, were also transported between these stations by buses arranged by the Railway. 4 Down and 3 Up Madras-Howrah Mails were diverted via Kharagpur, Jharsuguda and Vizianagram route.

### Restoration Operations

20. The break-down trains reached the site on 29-11-71 as follows :—

- (i) Khurda Road train with 40-ton steam crane at 7.30 hrs.
- (ii) Kharagpur train with 75-ton steam crane at 13.30 hrs.
- (iii) Waltair train with 75-ton steam crane at 14.25 hrs.

21. Permission for commencement of clearing operations was received from Police only on the 29th afternoon. The breakdown equipment was made use of thereafter at 14.20 hrs. The leading engine 7323 WP was reailed at 17.00 hrs. and its tender at 19.20 hrs. The handling of the 2nd engine 7322 WP was a difficult job and had to be tackled with the help of the two cranes from both ends. It was reailed at 5.55 hrs. on 30th morning. The clearance and rerailing of the coaches was carried out in the following sequence:—

(i) TLR 2729	..	..	..	..	22.40 hrs.	on 29-11-71.
(ii) FCT 894	..	..	..	..	0.30 hrs.	
(iii) GT 2110	..	..	..	..	6.45 hrs.	on 30-11-71.
(iv) WFCT 2038	..	..	..	..	8.50 hrs.	
(v) GTY 2132	..	..	..	..	9.40 hrs.	

22. The tender of the 2nd locomotive was the last to be lifted at 14.05 hrs. on 30-11-71 and its trolleys at 14.25 hrs. The up line was restored to the traffic at 14.00 hrs. with a speed restriction of 10 Km. P.H. while the Down line was certified fit at 16.00 hrs. when double line working of the trains between Retang and Bhubaneswar was resumed.

## II. LOCAL CONDITIONS

### The locality

23. The derailment occurred on the down line between Retang and Bhubaneswar Railway stations on the Waltair-Howrah East Coast Section of the South Eastern Railway at Km. 439.9 from Howrah between telegraph posts 439/15 and 439/14. The site of accident is 15.4 kilometres from Khurda Road and 8 Kilometres from Retang towards the North and is about 3.5 kilometres South of Bhubaneswar. A civil aerodrome is situated on the western side of the railway line while there is a village by the name of Sunderpada at a distance of about one kilometre on the Eastern side.

24. The down line between Retang (Km. 447.9) and Bhubaneswar (Km. 436.4) covering a distance of 11.5 kilometres was constructed as a part of the double line between Nergundi and Khurda Road and was opened for orthodox doubling in December 1965. The ruling gradient of the section is 1 in 150.

25. The terrain around the site of the accident is plain and barren and the track runs in a cutting 4.27 metres (14') deep, the track centres between the up and down lines being 4.85 metres (15' -11"). The track at this point is on a 1° fully transitioned curve, 1125 metres (3689') in length, starting from Km. 440/12-13 and ending at Km. 439/12-13.

26. Retang station yard is on a 1 in 1000 grade and after leaving Retang, the track generally follows the country on the level, falling and rising grades of upto 1 in 800 till Km. 440/12-13, whereafter it rises on a 1 in 175 grade upto the site of accident and beyond upto 439/11-12. It then continues to rise in a grade of 1 in 150 upto Km. 439/7-8 reaching the summit and starts falling thereafter.

27. There are only four small 2' and 3' slab bridges and two level crossings in the vicinity within one kilometre on either side of the accident site. One of the level crossings is 'C' class unmanned at Km. 441/2 and the other 'B' class double manned level crossing at Km. 439/4. This level crossing connects the old Bhubaneswar town on the East side to the aerodrome and the New Capital on the West side.

#### **The Permanent Way**

28. The track consists of 52 kg. rails, 12.8 metres (42') long with fish plated joints. The sleepers are IRS steel trough, laid to N+6 density having wooden sleepers at the joints with anti-creep bearing plates and round spikes. Two-way keys of non-removable type have been used on 53% of the trough sleepers. The ballast used is 2" broken stone having a depth of 10" to 11" below the sleepers.

29. The general direction of the line approaching Bhubaneswar from Retang (Waltair side) is south-west to north-east and the trains running in this direction are designated as Down trains while those running from Howrah towards Waltair are designated as Up trains.

30. The accident site falls in the Puri District of Orissa State and the Divisional Headquarters of the railway are situated at Khurda Road. The Capital of Orissa state is at Bhubaneswar itself.

#### **System of Working**

31. The entire section from Baranagar to Khurda Road is double line and the trains are worked by means of double line lock and block instruments provided in the end cabins at all stations.

#### **Permissible Speed**

32. The maximum permissible speed over the section between Retang and Bhubaneswar is 100 Km. P. H. There were no permanent or temporary speed restrictions between Retang and Bhubaneswar with the exception of a permanent restriction of 15 Km. P. H. on the Down line on account of negotiating 1 in 12 points and crossings while entering the Bhubaneswar Yard.

#### **Weather and Visibility**

33. The accident took place during the early part of the night. It was a bright moon lit night as the moon was in the ascending quarter and it was three nights before the full moon. The weather was clear and the visibility under the engine headlights good.

### **III. SUMMARY OF EVIDENCE**

34. Shri H. G. Henderson, the leading Engine Driver of 7 Down Engine No. 7323 WP said that his train left Khurda Road at about 19.28 hrs. on 28-11-71. He passed Retang on through signals and was approaching Bhubaneswar when, after he had almost passed the last curve in the cutting, he suddenly found that his engine went off the rails very smoothly and was rough-riding on the ground. He immediately destroyed the vacuum applying the brakes and shut the regulator. He also applied the engine steam brakes. Within 5 to 10 seconds or a little later, the engine came to a stop in a cloud of dust. After making sure that his Fireman were alright, he asked the First Fireman to run with the hand signal lamp towards Bhubaneswar station and ask the gatekeeper of the first level crossing over the telephone to tell Bhubaneswar not to allow any Up train from there as both Up and Down lines were blocked. He also followed a little later and made sure that instructions had been carried out. At the gate he found a private motor car in which he reached Bhubaneswar station and contacted the Assistant Station Master on duty. He also informed the Section

Controller on the Control phone and asked him to rush medical aid. After this, he returned to the site of accident with some military personnel. On arrival there, he learnt that the injured had been taken away to the hospital. Then, after finding his staff, he retired for the night. He was served with biscuits and coffee by a retired Mail Driver Shri R. S. Martin.

He did not note down the time of derailment. He had observed his speedometer, a little before the accident when his speed was about 70 to 75 Km. P. H. His engine headlights were properly lit and the visibility was about 300 meters, i.e., about 5 to 6 telegraph posts. He could not observe any discontinuity in the track before his train derailed, on account of the curve. He had not noticed any person wandering in a suspicious manner near the track, when he approached the place of derailment. He had worked on this route for the last three years. His engine was in top condition and was running very smooth. There was one repeated booking on his loco of the intermediate draw bar having been slightly slack. After he returned from the station, he did not try to find out how the accident took place as he was feeling too tired and exhausted.

35. Shri A. Carvalho, the First Fireman of Leading Engine No. 7323 WP of 7 Down said that after passing through Retang and before approaching Bhubaneswar station, when the train had entered the cutting near the aerodrome, his engine suddenly swayed sideways. His driver immediately dropped the vacuum after shutting off the regulator. He also heard the sound of the engine wheels running on ballast and then stopping with a heavy jerk. As per instructions of the Driver, he went to the level crossing gate and with the help of the gateman, protected the Up track. Thereafter he returned to the site to find out as to what happened to the crew of the other engine. He found that the Driver of that engine had already been taken out while the Second Fireman of his engine was taking out his counterpart of the second engine from the cab. He assisted him in this work. He then came back to his engine and dropped the fire after filling the boiler. He had not noted the time of the accident. He said that according to his guess, the speed of his train just before the accident must have been 65 to 70 Km. P. H. but he had not seen the speedometer. His engine headlights were lit and he could see for a distance of 2 to 3 telegraph posts. The running of his engine from Khurda Road to the site of the accident was all right and he did not notice any defect in the locomotive. While approaching the site of the accident, he did not notice any men on the track or in the cutting.

36. Shri S. K. Guchait, the Second Fireman of the Leading Engine of 7 Down said that after passing Retang while the train was running through the cutting, he felt a sudden jerk and heavy swaying of the engine on the ballast and as he was standing on the left side of the engine, he immediately fell down on the footboard and was hit on his left hip. He then described how he assisted in rescuing the Second Fireman of the trailing engine and took him to the top of the cutting where the Driver of the trailing engine had already been brought and both of them were then taken by some people to the hospital.

He did not note the time of the derailment. He had looked at the speedometer about half a minute before the accident and it was reading 75 Km. P. H. The headlights of the engine were brightly lit and, under the headlights, one could see very well for about 5 rail lengths. He had no recollection of any men loitering about on the track or in the cutting or even at a distance. His loco was running smoothly with no jerky motion or any unusual sound before the accident.

37. Shri K. K. Mitra, Guard of 7 Down deposed that his train passed through Retang station at 19.42 hrs. on 28-11-71 and after it entered the cutting between Retang and Bhubaneswar at Km. 440, he felt a severe jerk followed by a recoil and the train came to a stop at about 19.50 hrs. He, immediately, got down from the brakevan and rushed to the front of the train where passengers were all shouting. He noticed that the leading engine No. 7323 WP derailed of all wheels and stood between the Up and Down tracks. The 2nd engine No. 7322 WP had its tender in a tilted position resting against the cutting on the left side. The engine portion had totally capsized, lying on its left, across the Up and Down tracks. He then described the disposition of various coaches on the train as he observed them after the accident. He, with the assistance of the sleeper coach attendant Shri Routray, rendered first aid to the injured and utilised his first-aid box for this purpose. At 20.45 hrs., the Ambulance Van from the Bhubaneswar Capital hospital arrived at the site with doctors and the injured persons were removed to the hospital. The Ambulance train from Khurda Road with railway officials arrived at site at about 21.30 hrs. and took control of the situation.

He noted the time of the accident by his watch as 19.50 hrs. The speed of his train was about 70 to 75 Km. P. H. He was asked if he tried to ascertain the cause of the accident and in reply he said that after protecting his train, he went to find the cause and to look for clues with the help of his torch. He observed that the track was disconnected and a pair of fish plates and some bolts and nuts were lying at the spot. The time then was about 20.50 or 20.55 hrs. He thus suspected that this was a case of sabotage. He did not show it to anyone immediately as he shouted to call the passengers and witness it but none came forward. He showed these fish bolts and fish plates to the Chief D.T.I. Shri Bose on the arrival of Ambulance Van

from Khurda Road. Asked why he did not mention anything about his observing the fish plates and fish bolts lying at site in his report, he explained that even though he had observed these before giving his written report, he did not mention it as he was not sure.

38. **Shri B. N. Nanda, Assistant Station Master on duty at Bhubaneswar on 28-11-71**, said that South Cabin Switchman gave line clear for 7 Down at 19.35 hrs. and reported to him that the train left Retang at 19.42 hrs. At 19.55 hrs., the Switchman reported that someone from the gate lodge of the level crossing near the aerodrome had informed him about the derailment of 7 Down Express. Immediately he informed the Khurda Road Control Office and then the Station Master, about the mishap. He also told the Enquiry Clerk Shri B. Mahapatra to inform the Capital Hospital, Capital Police Station and other Police and Civil authorities over the P & T telephone. The Station Master came to the office at 20.00 hrs. after which he proceeded to the site reaching there at 20.20 hrs. by a private jeep and rendered assistance to the injured. He returned to the station at about 21.30 hrs.

He was asked if he tried to find out the cause of the accident, to which he replied in the negative and said that he did not do so as he wanted to come to the station as early as possible to give the information about the injured persons.

39. **Shri D. C. Mitra, Sub-Inspector/DJB/Khurda Road**, alongwith SI/GRP/Cuttack, Shri N. Kaur, entrained 7 Down at Khurda Road. He was going to Balasore while Shri Kaur was going to Cuttack. At about 19.50 hrs. he got some shaking which, he thought, might have been on account of high speed. After a minute or two, he got a big repeated jerking and the train stopped. The coach tilted to the left. They came out of it and ran to the nearest telephone which was in the gate lodge. There they found that the gates were locked and there was no gateman nearby. On his giving a shout, one person came covered with a chaddar and they informed him about the accident. Then he went inside and telephoned the Cabin-man asking him to arrange for relief and inform the GRP. Thereafter, they went in search of a public telephone. They reached Munna Medical Stores at about 20.20 hrs., from where they phoned up the GRP. O. C., GRP Shri R. Mohanty, had not received the information till then. From there they went to the Police Station and learnt that information had already reached there and a party had left for the site of accident. They then returned to the site by a rickshaw, reaching there at about 21.15 hrs.

In reply to questions, he said that he saw the fish bolts and fish plates lying near the open joints at about 23.30 hrs. He was asked as to what he was doing after his return to site at 21.15 hrs. and he replied that he had rested, having become very much exhausted by doing all the running. He went to verify about the fish plates and fish bolts only after someone informed him about it.

40. **Shri N. M. Bose, Chief DTI, Khurda Road**, arrived at the station at about 20.25 hrs. on 28-11-71 on hearing the siren and was at the Medical Van Siding at 20.30 hrs. He proceeded by Medical Relief Van leaving Khurda Road at 20.40 hrs. and arrived the site at 21.35 hrs. While proceeding towards the engine from the rear, he met the DSO/Khurda Road at about 22.00 hrs. near bogie No. FCT 894 and noticed alongwith others that two fish plates of the left side rail were lying inside the track under this bogie which was surrounded by Police and RPF staff. As per instructions of the DSO the accident photographer was called there to take photographs. On being asked if he saw only a pair of fish plates or anything else, he said that he also saw some bolts and nuts a little ahead of the joint but did not count how many.

41. **Shri J. P. Sharma, General TTE by 7 Down Express** was travelling in the third class coach No. GTY 2132 next to the front TLR. He described his activities after the accident. He was questioned if he noticed any fish bolts and fish plates lying loose near the track and in reply he said that he alongwith Shri Senapati, Addl. Superintendent of Police, noticed them about half-an-hour or so after the accident. He saw 4 bolts lying at site intact with threads, by the help of a torch. On being asked if he saw the loose fish plates also, he said that he did not observe them.

The witness was recalled on 3-12-71 and Shri Senapati confirmed that he (the witness) was present at the site when the Sub-Inspector Shri G. C. Das of Capital Police Station pointed out about the presence of loose fish bolts, nuts and fish plates. Shri Senapati mentioned that the time then was about 21.00 hrs. or 21.10 hrs.

42. **Shri Gobind Chandra Das, Sub-Inspector of Police, Capital Police Station, Bhubaneswar**, said that at about 8 P. M. his Inspector-in-Charge received a telephone message about the accident and he took him as well as some others in a jeep reaching the spot at about 8.30 P.M. Then they started to search and collect the injured persons from inside and underneath the coaches. While moving near the train, he noticed a group of railway personnel and it was noticed by him there that one fish plate and 2 to 3 bolts were lying by the side of the rail on the left side. The time, then was about 8.45 P.M. He posted a constable and informed his Addl. Superintendent of Police, who was nearby. He alongwith some Railway Officers visited and saw these at the spot. On being questioned, he said that he did not count the number as he was in a hurry and had brought these to the notice of his Addl. Superintendent of Police.

43. **Shri G. D. Sahoo, Train Examiner, South Eastern Railway, Puri** was on duty on 28-11-71 in 8 to 16 hrs. shift. He received advice memo for examination of 8 Up/7 Down rake with 17 bogies and the intensive examination of the train started from 10.10 hrs. During the examination by Electrical Department coach No. 892-FCT was marked sick and was replaced by coach No. 2038-WFCT. This was also intensively examined, repaired and tested. He said that he was the over-all supervisor in-charge for the men working with him and he checked the trains personally. He was satisfied before the rake left the inspection pit that it was fully attended to and was fit for the run.

44. **Shri N. R. Anjaneyulu, Divisional Engineer (II), South Eastern Railway, Khurda Road** on hearing about the accident, went to the station at 20.30 hrs. and he alongwith other officers left by the Ambulance Van Special reaching the site of accident at 21.34 hrs. While proceeding along the track, he learnt from Shri Patnaik, Asstt. Permanent Way Inspector, Bhubaneswar, that one rail joint was seen opened and the rail ahead was not in position but kept on its side a few feet away from the joint inside the track. He then proceeded to the spot and found some police personnel already there. With the help of his 5-cell torch he noticed that a rail joint on the left was in open condition with the rear rail in position and the front rail was lying about 7 ft. ahead, on its side on the inside of the track, with the foot towards the left. This rail did not appear disturbed or hit by passing wheels. He also noticed 2 fish plates lying flat, side by side, on the joint sleeper on the inner side of the left rail. Further, he saw four fish bolts and nuts separately lying near about on the outside of the rail. 4 loose keys were also noticed by him lying ahead of the rail. He proceeded further and saw that at the front end of the separated rail, there were no fish plates and the next rail was noticed lying on the ballast a few feet away on the left side. He looked round for the fish plates and found one fish plate lying on the ballast a few feet away. The second fish plate, however, could not be found. He also noticed that all the sleepers of the separated rail were pressed and flattened on the left side at the rail seats with crushed stone ballast on the top, indicating that the wheels had passed over the sleepers without the rail in position. Beyond the 2nd rail, a coach was leaning on the left side against the cutting wall and so he could not proceed further. Then he went to the other side of the track and observed the condition on the right hand side which he described as he had seen.

On being questioned he said that the time when he observed the open joint, fish plates, etc. was about 21.45 hrs. In an experiment conducted in the presence of the police, on 1.12.71, it took 6 minutes to remove fish plates, fish bolts and nuts from one joint with the permanent gang and normal tools. In his opinion the opening of two joints, the removal of the keys and shifting of the rail from position will take about 10 to 12 minutes with 8 or 10 men doing the job. He said 4 or 5 men could also do the job, but it would be very difficult and take much longer time.

45. **Shri R. Viswanathan, Assistant Engineer (II), South Eastern Railway, Cuttack** was informed about the accident by the Sub-Permanent Way Inspector, Cuttack at about 20.40 hrs. on 28-11-71. He left Cuttack by Motor Trolley at 21.25 hrs. and reached Bhubaneswar at about 22.00 hrs. He arrived the site at about 22.40 hrs. and on surveying the area, he found that the right rail under the fifth coach from the engine was intact but the left rail was not in position. The joint was found open and the rail was lying on its sides, without any hit marks, 7 ft. ahead of the joint. He also observed four bolts lying outside of the left hand unaffected rail. He also saw four nuts, keys and two fish plates near the joint and described their position as he saw them. At the other end of the tilted rail he could only see one fish plate lying outside on the ballast. He could not see any point of mount in rear of the unaffected rail. He had inspected the track by motor trolley on 13-11-71, by push trolley on 15-11-71 and by the engine of 38 Down on 10-11-71 and did not find anything abnormal with it. In reply to a question as to when this portion of the track was last attended to by the gang, he said that it was on 20-10-71.

46. **Shri K. J. M. Patnaik, Assistant Permanent Way Inspector, South Eastern Railway, Bhubaneswar**, said that Shri Annu, Gatekeeper of level crossing at Km. 437/16 informed him about the accident, at about 20.30 hrs. on 28-11-71. He proceeded immediately to the site by push trolley with some gangmen and trolley men. On arrival, he observed, among other things that the leading wheels of coach No. 894 were derailed while the rear wheels were on the track. The fish plates lay inside on the joint sleeper side by side and all the fish bolts and nuts were lying close to the joint without any damage. The left hand rail was found lying on its side with its flange outwards, without any damage, about 7' ahead of the rail joint. He was asked at what time he reached the site of accident and whether he was the first Permanent Way man to reach there. He said it was at about 21.00 hrs. and he thought he was the first P. Way man to reach. He last inspected this portion of the track on 23-11-71 and did not find anything unusual in this length. During his inspection he found only three men present. The mate had not marked attendance for the absent gangmen till 10.00 hrs. and he was severely warned for this lapse and was instructed to pick up the joints as though packing cannot be done by three men. All this was recorded by him in the gang-diary. He said that the work of this gang was generally satisfactory. On this occasion however, the gangmen could not reach the site of work in time as they came by 438 Down which was running late. He also carried out an inspection on of Brakevan by 38 Down and did not observe anything unusual.

47. **Md. Hafizullah, Permanent Way Inspector, Barang**, was on leave for 15 days from 15-11-71 and resumed his duties on 30-11-71. Before proceeding on leave, he had inspected the section last on 13-11-71 by a push trolley. He did his footplate inspection on 4-10-71 and brakevan inspection on 4-11-71. He found nothing abnormal in the track.

48. **Shri U. S. Patnaik, Driver of D 1221 Up and Shri H. N. Debnath, Driver of Down Diesel Light Engine No. 17057**, were the Drivers of the last trains to pass the Up and Down lines before the accident. Shri Patnaik left Bhubaneswar at 18.23 hrs. and arrived Retang at 18.55 hrs. while Shri Debnath passed Retang at 18.40 hrs. reaching Bhubaneswar at 18.55 hrs. Both of them had a smooth run and did not notice anything unusual. They did not recollect noticing any people loitering about the track under suspicious circumstances or sitting or working near the track.

#### IV. INSPECTIONS, OBSERVATIONS AND TESTS

49. I reached the site of the accident at about 8.30 hrs. in the morning of 29-11-71. I was told that nothing had been disturbed and conditions were exactly the same as after the accident. The position and damage of the various track materials and the disposition of the locomotives and the coaches were taken note of. These have been described in para 4, and the damage to the locomotives and rolling stock in paras 11 and 12 earlier. The salient observations made by me in respect of the track are described in the paras that follow.

(LO has been taken as the first undisturbed rail on the leftside, RO as the rail opposite to it and L1, L2, R1, R2, etc. as the subsequent rails on the left and right sides respectively. The joints are described as L0-L1 being the one connecting rails L0 and L1, R0-R1 connecting rails R0 and R1 and so on).

50. It was observed that the derailment commenced from the leading end of rail LO, there being no mounting or derailing marks in rear of it. Rail LO was in position intact with bearing plates and keys. Joint LO-L1 was in open condition and 4 fish bolts and 4 nuts were found lying near the joint on the outside of the rail to the left. A pair of fish plates was lying near this joint on the inside of the rail and parallel to it. Ahead of the joint, the first sleeper (a wooden one) was in position undamaged with two keys lying on either side of the bearing plate, the rail seat lying exposed without any mark on it. The second and the subsequent sleepers were of the IRS through type and the rail seats of all these sleepers were dented and flattened with wheel marks, the extent of denting and flattening increasing in the direction of travel. The 3rd and subsequent sleepers were covered with crushed stone ballast, and the sleepers ahead of the 10th had also been bent upwards.

51. Rail L1 was lying tilted, 7'-3" ahead of the joint, on the inside of the track, its foot facing outwards and the head inwards. There were no hit or grazing marks noticed on the rail and all the fish bolt holes were found clean and round without any elongation. It was further seen that the wheel axles of the coach FCT 894 were pressing this rail. Rail L2 was lying disjointed from L1 with its rear end 3' away from the front end of L1 towards the left. One fish plate was found on the left cess about 3'-5" in rear of it. The other fish plate could not be seen. (One fish plate was found ahead in the side drain, mixed up in ballast). The rear end (running on end) of this rail had hit marks on the top of the head, all along the width and its leading portion was covered with ballast. The rail was lying bent and slightly damaged. Rail L3 could not be seen but was later found buried under the ballast in the left side drain with its front end connected to rail L4, the joint being intact with fishplates, eportions of which had sheared off at the top.

52. The track ahead could not be seen being disturbed and buried under the coaches but later during the restoration it was seen by Shri N. R. Anjaneyulu, Divisional Engineer II, Khurda Road, that the front end of L4 was conncted to L5 with fish plates in position but the joint was bent and the fish plates damaged. The first fish bolt and nut were missing while the second and third were intact holding the two rails and the fourth bolt was inside the hole but sheared off. Rail L6 was disjointed at both ends, bent into an 'S' shape and broken into two portions, the pront fortions 22'-10" in length having bent into a 'U' shape. No fish plates etc. could be found nearby. The next rail—L7—was bent into an 'L' shape at its rear end and the front end slightly bent, was connected to L8 with all fish plates, bolts and nuts intact. L8 was slightly bent but intact in position and connected to the undisturbed track ahead.

53. On the right side rail RO was intact and in position, connected to rail R1 with undamaged fish plates, bolts and nuts. Rail R1 was also in position upto the 7th sleeper ahead of the joint, with keys intact, beyond which the rail had been twisted out, being forced by the derailed wheels which had dropped inside. Deep wheel dropping marks were noticed on the rail-head in this length. Rail R2 was lying on its side to the right, on the slopes of the ballast 5'-9" ahead of rail R1 between the Up and Down tracks, its head facing outwards. Both the fish plates of joint R1-R2 were attached to it with one bolt and nut in position. The bolt was slightly bent. The leading joint bolt holes were elongated showing marks of the bolts having been twisted out of their position.

54. The track beyond rail R2 was uprooted and badly disturbed and could not be found. Later it was noticed that Rail R3 had been pushed out towards the left and was lying 8'-6" ahead of rail L2 in the left side drain. The rail had a hit mark on the head at the rear end and the front hole of joint R2-R3 was slightly elongated. Rail R4 was also separated at both ends and was found bent and buried under the debris. The two fish plates remained attached to the rear end with only one bolt fixed in the rear hole of the rail and the rear ends of the fish plates bent outwards. R5 was displaced, bent and lying between the two tracks with the front end attached to R6 and having only three bolts and nuts fixed. The rear bolt and nut were missing and the rear ends of the fish plates were bent. R6 was also bent and was lying between the tracks, separated from R7 without any fish plates, bolts and nuts. R7 was found bent and lying partly buried under the trailing locomotive with the front end connected to Rail R8. R8 was slightly bent in the middle and was connected to the undisturbed track ahead.

55. First eight sleepers under the rail panel L1-R1 were found in position while the 9th to 15th sleepers were pushed ahead and found bunched up. The sleepers ahead of it were all completely disturbed. All the steel sleepers could be recovered from the site while a number of joint wooden sleepers were crushed and only 10 out of the 15 could be accounted for. Of the total track components under the 8 rail panels affected, a number of small fittings could not be recovered from the site having been lost in the debris. The list of material recovered against the numbers required to be accounted for is as below :--

Materials	No. to be accounted for	Actual No. recovered
1. Rails .. .. .. .. .. ..	16	16
2. Fish plates .. .. .. .. ..	36	35
3. Fish bolts .. .. .. .. ..	72	63
4. Fish bolt nuts .. .. .. .. ..	72	45
5. Sleepers-IRS Steel Trough .. .. .. .. ..	135	135
6. Wooden sleepers at joints .. .. .. .. ..	15	10
7. Loose jaws .. .. .. .. ..	540	219
8. Keys .. .. .. .. ..	600	325
9. A. C. Bearing plates .. .. .. .. ..	30	30
10. Round spikes .. .. .. .. ..	60	60

*Note : The detailed damage to the track as noted by the Divisional Engineer No. II, Khurda Road is described in his note reproduced in Annexure I.*

#### General Condition of the Track

56. General condition of the track was found very satisfactory except that some keys and jaws were missing. It was stated that there is a heavy theft of these in this area and the matter is being continually taken up with the police, the missing fittings being made good from time to time. The details of the track were recorded for the curve in rear of the point of derailment. It was found that the gauge and cross levels were within permissible limits, the gauge being mostly exact, having varied in some portions upto 1/16" and in an isolated case upto 1/8" slack. The superelevation varied upto about 1/4" only and the percentage of missing keys and jaws was about 5%. From these observations, I am satisfied that the condition of the track was such that it could not have, under any circumstances, caused a derailment even at the maximum permissible speed of the section or a little in excess of it.

#### Locomotives and Rolling Stock

57. Shri V. Masilamani, Divisional Mechanical Engineer, Khurda Road, carried out an examination of the locomotives and coaches after the accident, except for the four coaches, which were heavily damaged as a result of the accident. He could not find any defects or deficiencies either in the locomotives or any of the coaches, apart from the damage caused in the accident. In the examination of the locomotives, among various other observations, he observed a deep cut mark (3/4" x 5/8" x 3/16" deep) on the flange of the left leading bogie wheel of the front locomotive No. 7323-WP.

58. A detailed examination of the locomotives was carried out at Kharagpur in the workshops to check up if there was any defect in them which could have caused the derailment. According to the examination carried out, it was found that no such defect could be traced.

59. An experiment was conducted in my presence as well as in the presence of Shri A. Khadara, Inspector, CID Crime Branch, Cuttack on 4-12-1971 to determine the time that it takes to open out and shift a rail with similar track fittings. It was observed that with 8 men working, it took about 7 minutes to open out the joint, remove the keys and jaws and shift the rail to a position as found in the accident. Refitting back the track also took almost the same time.

## V. DISCUSSION

### Time of Accident

60. According to the guard of the train, the accident took place at 19.50 hrs. The Assistant Station Master on duty at Bhubaneswar has stated that he got the information of the accident at 19.55 hrs. As already discussed in para 15 earlier, I do not accept his timings. In any case the time in this case is not of much consequence and as the guard was the only witness on the train who has observed it, I accept his statement as correct and take it that the accident occurred at 19.50 hrs.

### Speed of the Train

61. It is unfortunate that although the two locomotives were fitted with speedometer-cum-speed recorders, the V.D.O. disc chart had not been fitted to them due to shortage of these disc charts. Driver Henderson observed his speedometer a little before the accident and according to him the speed then was 70 to 75 Km. P.H. The First Fireman Carvalho did not see the speedometer but guessed the speed to be 70 to 75 Km. P. H., while Second Fireman Guchait had actually noted the speed to be 75 Km. P. H. about half-a-minute before the accident. The guard estimated the speed at 70 to 75 Km. P. H. There has been no evidence from any quarter that the train was over speeding or moving fast, I, therefore, accept that the speed of the train at the time of the accident must have been in the vicinity of 75 Km. P. H.

### Cause of the Accident

62. From the evidence as well as the observations made after the accident, it is seen that the train was running within the maximum permissible speed and no defects or deficiencies of any significance were noticed either in the locomotive or the rolling stock. The general condition of the track was good. A Down Diesel Light Engine had passed the site a little over an hour earlier and its driver had found the running to be smooth and did not notice anything unusual. In view of this, I have ruled out the possibility of the derailment having taken place due to either over speeding of the train or any defects in the permanent way or the rolling stock.

### Evidence of Tampering of Track

63. Shri Gobinda Chandra Das, Sub-Inspector of Police, Capital Police Station, Bhubaneswar reached the spot at 20.30 hrs. i.e., within about 40 minutes of the accident. On reaching there he noticed the disconnected rail and the undamaged bolts and nuts lying near the open joint at about 8.45 P.M. The loose fish bolts and fish plates were also noticed by Shri J. P. Sharma, General Travelling Ticket Examiner in the presence of Shri Senapati, Additional Superintendent of Police, Bhubaneswar at about 21.00 hrs. It is thus clear that the evidence of tampering was found by a number of people within an hour of the accident and there is little likelihood of these clues having been planted by anyone during this period, after the accident.

64. The following material evidence positively leads to the conclusion that the derailment was as a result of the removal of left hand rail L1 after opening out joints L0-L1 and L1-L2 :—

- (i) All the two fish plates, four fish bolts and four nuts of the joint L0-L1 were lying loose at site and seen by people within a short time of the accident.
- (ii) There were wheel dent marks on the left side rail seat of all the sleepers starting from the second sleeper S2 beyond joint L0-L1. These wheel marks could not have been there had the rail been in position when the wheels of the locomotives and coaches passed over them.
- (iii) The rear (running on) end of rail L2 had hit marks on the top all along the width and such hit marks could not have been there if rail L1 was connected to L2 at the time of the accident.
- (iv) The displaced and undamaged rail L1 was pinned underneath a coach. This proves beyond doubt that the rail was in that position before the accident as it could not have been brought and planted there afterwards.

65. I, therefore, consider that when 7 Down Puri-Howrah Express approached the site of accident, rail joints L0-L1 and L1-L2 had been opened out and the keys from the various sleepers were removed releasing the rail which was then tilted and shifted from its position leaving a gap between the rails L0 and L2. The front engine of 7 Down as it reached this gap must have derailed and travelled on the sleepers ahead. Being in speed, it would have jumped the first sleeper ahead of the joint and for this reason there was no mark of any wheel at the rail seat of this sleeper while there were denting marks on the rail seats of subsequent steel sleepers. The left front wheel of the engine, after covering the gap, hit the rear head of rail L2 (the deep dent mark on the left leading wheel of the leading locomotive corresponds to this hitting). The battered head of rail L2 clearly shows that rail L1 was not in position when the wheels hit it from the rear.

66. The removal of rail having taken place in the deep cutting, it was fortunate that there was no capsizing of many coaches and the casualties were light. Even considering the damage to the coaches that has taken place the casualty figure is remarkably low.

67. Sufficient time was available for the miscreants to carry out their nefarious activities after the passage of the previous train viz. Down Diesel Light Engine.

## VI. CONCLUSIONS

68. On full consideration of the factual, material and recorded evidence, as discussed earlier, I conclude that the derailment took place as a result of one of the left hand rails having been opened out and shifted, causing a gap in the continuity of the rails, by some unknown persons.

69. As it is not possible for the train crew in detecting the discontinuity in the track specially on a curve, no blame rests on them in not having averted the accident.

## Relief Measures

70. I am satisfied that the relief afforded to the injured and other stranded passengers was adequate and satisfactory.

## VII. REMARKS, RECOMMENDATIONS & INCIDENTAL OBSERVATIONS

71. It was observed that the tachograph charts had not been fitted to the Speed Recorders. It was stated that there was a shortage of these. The very purpose of providing a speed-recorder is defeated if they are not fitted with the charts as in the absence of these no check can be exercised on the drivers exceeding the permissible speed nor can the speed of the train be determined in the event of an accident. It is, therefore, essential that all efforts are made to procure them and ensure that these are invariably fitted.

72. In this particular case, non-removable keys were fitted and these are supposed to be an anti-sabotage device. I, however, noticed that these do not in any way hinder the removal of keys from steel trough sleepers. A little hammering of the jaws loosens them and the keys can be released without the slightest of difficulty. No reliance should, therefore, be placed on non-removable keys as an anti-sabotage measure.

73. The accident took place when the train with 17 coaches was travelling at about 75 Km. P. H. Both engines and 5 of the coaches derailed and capsized. Looking to the seriousness of the accident, I consider that the casualties viz. 4 grievous and 12 minor injury cases, were very light. These could have been considerably higher but for the integral and anti-telescopic steel-bodied coaches marshalled in the front, next to the engines.

74. It was fortunate that the Police officers reached the site within a short time of the accident and could see the evidence of tampering for themselves; otherwise, later, it could have become a matter of dispute. Shri D. C. Mitra, Sub-Inspector, D.I.B., Khurda Road and Shri N. Kaur, Sub-Inspector, G.R.P., Cuttack, immediately went to the level crossing gate to inform Bhubaneswar Station and the local police.

The Guard observed the disconnected track and the loose fish-plates etc. near it but did not bring it to the notice of anyone nor did he mention it in his First Information Report handed over to the Police at about 22.15 hrs.

It should be impressed on all concerned that in the case of a derailment after giving relief to the passengers, all Railway staff including security personnel on the train should try to ascertain about any clues of tampering and if they do find them, they should get responsible passengers to witness them. They should also ensure that these clues are properly protected and safeguarded from being interfered.

75. It is noticed that a number of gangmen of the section are staying at a long distance from their place of work and have to depend on the morning train to reach their work. In the event of late running of the train they get late. This appears to be unsatisfactory and it should be seen that the gangmen live near the place of work by providing suitable accommodation for them.

76. I must express my appreciation for the cooperation and assistance that was given to me during my inquiry by the Orissa Police Officers.

Yours faithfully,

*Calcutta, dated  
the 12th February, 1972.*

(Sd.) (Arya Bhushan)  
*Additional Commissioner of Railway Safety,  
South Eastern Circle.*

## ANNEXURE—I

### STATEMENT SHOWING THE DETAILS OF DAMAGE TO THE PERMANENT WAY

#### RAILS :—

**Rail L0**—Intact in position with bearing plates and keys. The top edge of the rail head on the running of end was shining due to wheels dropping down, therefrom. The joint at this end was open and a pair of fish plates was found lying on the inside of the rail, parallel to it. Four fish bolts and four nuts were also seen lying near the joint, on the outside. Of these fish bolts one was lying on sleeper S0 and one on S1. The other two were in the rear of S0. Of the four nuts one was lying on the Sleeper S0, two on the ballast on either side of sleeper S1 and the fourth in rear of the sleeper S0 between the two bolts. All the nuts were lying on the outside of the track to the left.

The bearing plate on the joint wooden sleeper S1 was in its position. Two keys were found—one on either side of this bearing plate. Two more keys were found on the ballast between sleepers S1 & S2.

**Rail L1**—was lying tilted on its side, 7' 3" ahead of the joint L0-L1, on the innerside of the track, with its foot facing towards the left. No hit marks or grazing marks were noticed on the rail. All the fish bolt holes were round and not elongated.

**Rail L2**—was lying disjointed from L1 with its rear end 3 ft. away from the front end of L1, towards the left, one fish plate was found on the left cess about 3'-6" in the rear. The other fish plate could not be recovered from the site.

The rear end of the head of this rail viz. the running on end had hit marks at the top all along the width. The rail was bent having a reverse curve with wheel cutting and grazing marks on the top of head commencing from 4'-0" and continuing upto 31'-8" from the rear. There were deep cut marks, shearing off a portion of the bottom of the rail head, along the gauge face for a length of 9", from 15'-3" to 16'-0". The inside flange had dents and vertical bends upto 13'-9" and the web of the rail was covered with ballast at a number of places. The front end of L2 was 8'-6" from the centre line of the down track to the left.

**Rail L3**—was lying in the left side drain, 25'-3" ahead of L2, covered by ballast. There was a hit mark on the right hand corner of the rail head at the rear end. A 3/4" triangular piece had broken at the right hand corner of the flange at the rear end of the rail. The front end of this rail was connected to Rail L4 with fish plates, protruding rear portions of which were however sheared off at the top. The first bolt head and nut were also sheared off and the bolt was inside the hole. The second and third fish bolts and nuts were in position but the bolts were bent. The second nut was having a hit mark on the top. The fourth bolt was sheared off and lying at the site. The second, third and fourth holes were slightly elongated.

**Rail L4**—was lying in the left side drain. The rear end was slightly bent inwards for a length of 18'-6". The front end of this rail was connected to Rail L5 with fish plates in position. The joint was bent and the rear ends of both the fish plates had hit marks on top. The left side fish plate was sheared down for a length of 2" at the end. The first fish bolt and nut were not found. The second and third fish bolts and nuts were intact, while the fourth bolt was in position but sheared off.

**Rail L5**—was slightly bent at both ends. Fresh rubbing marks were noticed on top of rail head throughout its length. There were two prominent dents on the bottom inner flange and a few other minor dents along the inner flange. The front end of this rail was disjointed and separated from Rail L6. Fish plates, bolts and nuts were not seen.

**Rail L6**—was bent into 'S' shape and also fractured into two pieces of 19'-2" & 22'-10". The front end of this rail (viz. 22'-10") was bent into a 'U' shape. The front end of this rail was also disjointed and separated from Rail L7. Fish plates, bolts and nuts were not seen.

**Rail L7**—was bent into 'L' shape at its rear end. The rear end was having the bearing plate fixed to it intact with two round spikes and two keys but no sleeper was found below. The front end of the rail was also slightly bent and was connected to Rail L3 with fish plates, bolts and nuts; all intact.

**Rail L8**—was slightly bent in the middle and was intact in position with the undisturbed rail in the front.

**Rail R0**—was intact in position connected to Rail R1, with fish plates, bolts and nuts.

**Rail R1**—was in its position upto sleeper S7 beyond which the rail shifted towards outside. Light rubbing marks were visible on the top of rail head throughout its length. Deep wheel dropping marks were

noticed on the rail head near gauge face, commencing from 10 feet to 16'-6" from the rear end. Grazing marks were found on the inner foot of the rail from 11'-3" to 13'-0" and 14'-0" to 20'-0". The front end of the rail was disjointed and separated from Rail R2.

**Rail R2**—was lying on its side, 5'-9" ahead of Rail R1, on the slope of the ballast between the Up and Down tracks with the head facing outward. The two fish plates remained attached to the rear end of the rail, with only one fish bolt and nut fixed in the front hole. The bolt was slightly bent. The inner fish plate had a hit mark at the rear end of the fishing corner and it was also slightly bent vertically. The rear-most hole of the inner fish plate was found to be elongated with a shearing mark. There was also a slight elongation in the third hole from the rear. There was a hit mark found on the top edge of the outer fish plate in the rear. The rear two holes in this fish plate were found to be slightly elongated.

There were also hit marks on both the rear end corners of the rail head. The front end of the rail was bent upwards and also towards the inside. There were also crushed ballast marks on the rail head at several places. The front end of the rail was separated from Rail R3, without fish plates, bolts and nuts.

**Rail R3**—was completely pushed towards left side and was lying 8'-6" ahead of rail L2. There was a hit mark on the rear head and the rail was slightly bent inwards. The front fish bolt hole of the rear end was slightly elongated. A slight bend was noticed at the bottom of the flange at 1'-2" away from the rear. Fresh grazing marks were seen all along the gauge face except for a length of 6'-3" in front. The front end was separated from Rail R4.

**Rail R4**—was displaced and found bent and buried under the debris. The two fish plates remained attached to the rear end with only one bolt fixed in the rear hole of the rail. The rear ends of the fish plates were bent outwards. A portion of the top of the left side fish plate was found sheared off in the rear. One broken bolt was lying nearby. The front end of the rail was separated from the Rail R5, without any fish plates, bolts and nuts.

**Rail R5**—was displaced, bent and lying between the two tracks. There was a deep wheel mark on its head for a length of 18", at about 9'-0" away from the rear and another deep grazing mark at 14'-6" for about 8" on the inner top head corner. The rail was completely fractured at 12'-0" away from the rear. The longer piece was gas cut into two pieces of 2'-2" and 27'-10" during the restoration operation. Grazing marks were noticed on the edge of the inner flange from 6'-5" to 10'-6" and from 13'-3" to 14'-4" from the front end. A shearing mark for 9" was also noticed on the edge of the inner flange at 15'-6" and another for 1'-2" at 25'-6" from the front. The front end of the rail was joined to Rail R6 with fish plates but with only three bolts and nuts (2nd, 3rd and 4th). There were hit marks on the nut of the 3rd bolt and on the heads of 2nd and 4th bolts. The rear ends of the fish plates were bent. The collar of the inner fish plate was sheared off for 9" in the rear.

**Rail R6**—was bent and lying between the tracks. There was a shearing mark for a length of 1'-6" along the top corner of inner head at 4'-5" from the rear. Two deep dents were noticed in the outer flange at 3'-8" and 4'-1" from the rear. There were two vertical cracks at 2'-8-1/2" & 4'-5" on the rail head, the first extending across and the other extending for about half the rail head. The rail was gas cut into two pieces of 5'-8" and 36'-4" during restoration operations. The front of the rail was separated from Rail R7 without any fish plate, bolts and nuts.

**Rail R7**—was found bent and partly buried under capsized second locomotive (No. WP 7322). There were hit marks on the rail head over its entire width and also another hit mark in the middle of web, in the rear. It was gas cut into two pieces of 26'-1" and 15'-11" during the restoration operation. The front end of the rail was connected to Rail R8 with fish plates, bolts and nuts in position.

**Rail R8**—was slightly bent in the middle and the front end was connected with the undisturbed rail head.

#### Sleepers of Rails L1 and R1

(S1 is wooden joint sleeper and S2 to S19 are IRS Trough Sleepers).

#### Left Side

S.1.—The bearing plate was in position with rail seat exposed with two keys lying on either side of it.

S.2.—Rail seat was exposed, dented with wheel marks, both at the inner and outer holes. One loose jaw was found in the hole on the left.

#### Right Side

Bearing plate was intact and rail was in position with two keys. No damage.

**Left Side**

**S.3.**—Rail seat was exposed, dented with wheel marks and partly covered with crushed stone ballast. Heavy wheel pressing mark was noticed near the inner hole.

**S.4.**—Rail seat was exposed, dented and flattened with wheel marks. Cracks were noticed near the inner hole. Crushed stone ballast was found on the rail seat.

**S.5.**—Rail seat was exposed, dented and flattened with wheel marks. There was crushed stone ballast on the rail seat.

**S.6.**—Rail seat was exposed, dented and flattened with wheel marks. There was crushed stone ballast on the rail seat.

**S.7.**—Rail seat was exposed, dented and flattened with wheel marks. There was crushed stone ballast on the rail seat.

**S.8.**—Rail seat was exposed, dented and flattened with wheel marks. There was crushed stone ballast on the rail seat.

**S.9.**—Rail seat was exposed, dented and flattened with wheel marks, also on the sleepers to the left of the rail seat. There was crushed stone ballast on the rail seat.

**S. 10.**—Rail seat was exposed, dented and flattened with wheel marks, also on the sleeper to the left of the rail seat. The sleeper was partly covered under ballast with crushed stone on the rail seat.

**S. 11.**—Rail seat was exposed, dented and flattened with wheel marks. End of the sleeper was bent upwards. Crushed stone ballast was found on the rail seat.

**S. 12.**—Rail seat was exposed, dented and flattened with wheel marks. Crushed stone ballast was lying on the rail seat. End of the sleeper was bent upwards. The sleeper was partly covered under ballast.

**S. 13.**—Rail seat was exposed, dented and flattened with wheel marks. The sleeper was partly covered under ballast and the end bent upwards.

**S. 14.**—Rail seat was exposed, dented and flattened with wheel marks. Crushed stone ballast was seen lying on it and the end was bent upwards.

**S. 15.**—Rail was exposed, dented and flattened with wheel marks.

**S. 16.**—Rail seat was exposed, dented and flattened with wheel marks. Crushed stone ballast mark was seen on the rail seat and outside of it.

**S. 17.**—Rail seat was exposed, dented and flattened with wheel marks. Crushed stone ballast marks were seen on the rail seat and outside of it. The sleeper was twisted and partly buried under the ballast.

**Right Side**

Rail was in position with both the keys intact. No damage.

The rail was in position with both the keys intact. No damage.

The rail was in position with both the keys intact. There was a wheel mark on the inside jaw.

The rail was in position with both the keys intact. Wheel marks were on the inside key and jaw.

The rail was in position with both the keys intact. There were dented wheel marks on the sleeper to the left of the rail seat. The right rear wheel of the leading bogie of coach No. 894 FCT was resting on the inside key.

The rail was in position but slightly shifted outwards. There was no key or jaw on the outside. Only inside jaw without key was noticed. Dent marks were noticed on the sleeper to the left of the rail seat, which was also slightly flattened.

The rail position was shifted outwards. Dent marks were noticed near the rail seat and rail seat was flattened.

The sleeper was flattened with dent marks towards the left of the rail seat. There was only one jaw found inside.

The sleeper was partly covered under ballast with crushed stone marks on the rail seat. The sleeper was flattened with dent marks towards the left of the rail seat.

There were wheel marks towards left of the rail seat and the end of the sleeper was bent upwards. There was crushed stone ballast on it.

Rail seat was dented and flattened with wheel marks and crushed stone ballast on it. There were also wheel marks towards left of the rail seat.

Sleeper was partly covered under ballast. There were wheel marks towards left of the rail seat and the end was slightly bent upwards.

Sleeper was partly covered under ballast. There were wheel marks towards left of the rail seat and the sleeper end was bent upwards.

There were wheel marks towards left of the rail seat and the sleeper end was bent upwards.

There were wheel marks to the left of the rail seat and the sleeper end was bent upwards. Crushed stone ballast marks were seen on the inside of the rail seat.

**S. 18.**—Rail seat was exposed, dented and flattened with wheel marks. Crushed stone ballast was seen on the rail seat and outside of it.

**S. 19.**—Rail seat was exposed, dented and flattened with wheel marks. Crushed stone ballast was seen on the rail seat and outside of it. The sleeper end was bent upwards.

There were wheel marks to the left of the rail seat and sleeper and was slightly bent upwards. Crushed stone ballast was seen on the rail seat and inside of it.

There were wheel marks to the left of the rail seat. There was a dent on the rail seat as well as on the outside of it to the right. Crushed stone ballast was seen on the rail seat and inside of it.

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**1. Para 72 of the report:** Instructions have been issued to the Railways emphasising that the organisation for the maintenance of speedometers and procurement of spares should be brought on a proper footing so that no train runs without a speedometer/speed recorder in working order. The Railways have also been advised that the Loco Inspector (Safety) should make intensive and surprise checks and report to the administration the condition of speedometers/speed recorders fitted on the locomotives.

**2. Para. 73 of the report :** In view of the position explained by the General Manager and CRS' remarks thereon, no further action is called for.

**3. Para. 74 of the report :** This is merely an observation and calls for no action.

**4. Para 75 of the report :** Instructions on the subject have been issued to the Railways.

**5. Para. 76 of the report :** The position in this regard has been explained by the General Manager.